

CLAIMS

What is claimed is:

- 1           1.     An apparatus, comprising:  
2           first and second optical paths, an optical beam to be directed through  
3           the first optical path;  
4           an evanescent coupler including the first and second optical paths,  
5           the evanescent coupler evanescently coupling the first and second optical  
6           paths; and  
7           a first reflector included in the evanescent coupler and integrated in  
8           the first and second optical paths such that the optical beam directed  
9           through the first optical path is reflected from the first reflector as the  
10          optical beam is concurrently evanescently coupled from the first to the  
11          second optical path.
- 1           2.     The apparatus of claim 1 wherein the first reflector is defined at  
2           a plane of symmetry in a center of the evanescent coupler.
- 1           3.     The apparatus of claim 1 wherein the first reflector is at a first  
2           end of the first optical path, the apparatus further comprising:  
3           a second reflector at a second end of the optical path; and  
4           a laser cavity including a gain medium defined between first and  
5           second reflectors.

1           4.     The apparatus of claim 3 wherein the optical beam output from  
2     the output of the evanescent coupler has output spectrum that is similar to  
3     an intra-cavity spectrum of the optical beam directed through the laser  
4     cavity.

1           5.     The apparatus of claim 3 wherein the first and second optical  
2     paths and the first reflector are disposed in semiconductor material.

1           6.     The apparatus of claim 5 wherein the gain medium is disposed  
2     in the semiconductor material.

1           7.     The apparatus of claim 5 wherein the laser cavity comprises a  
2     first optical waveguide disposed in the semiconductor material and the  
3     second optical path is included in a second optical waveguide disposed in  
4     the semiconductor material.

1           8.     The apparatus of claim 7 further comprising a photonic device  
2     monolithically integrated in the semiconductor substrate and optically  
3     coupled to receive the optical beam from the second optical waveguide.

1           9.     The apparatus of claim 3 wherein the first and second optical  
2     paths include optical fibers.

1           10.   The apparatus of claim 5 wherein the semiconductor material  
2 comprises silicon.

1           11.   The apparatus of claim 1 wherein the first reflector comprises a  
2 Bragg grating included in the evanescent coupler and integrated in the first  
3 and second optical paths.

1           12.   A method comprising:  
2           directing an optical beam along a first optical path;  
3           reflecting the optical beam with a first reflector disposed in the first  
4 optical path; and  
5           evanescently coupling the optical beam in conjunction with reflecting  
6 the optical beam from the first optical path into a second optical path, the  
7 first reflector integrated with an evanescent coupler including the first and  
8 second optical paths.

1           13.   The method of claim 12 wherein reflecting the optical beam  
2 comprises reflecting the optical beam with the first reflector at a plane of  
3 symmetry in a center of the evanescent coupler.

1           14.   The method of claim 12 further comprising:

2 stimulating emission of the optical beam from a gain medium  
3 included in the first optical path; and  
4 reflecting the optical beam between first and second reflectors in a  
5 laser cavity defined between first and second reflectors so as to further  
6 stimulate emission of the optical beam in the laser cavity.

1 15. The method of claim 14 wherein the first reflector comprises a  
2 Bragg grating having a Bragg wavelength, wherein a center wavelength of  
3 the optical beam that is reflected between the first and second reflectors is  
4 substantially equal to the Bragg wavelength of the Bragg grating.

1 16. The method of claim 14 wherein evanescently coupling the  
2 optical beam in conjunction with reflecting the optical beam from the first  
3 optical path into the second optical path comprises directing the optical  
4 beam out from the laser cavity into an optical output of the evanescent  
5 coupler.

1 17. The method of claim 16 further comprising directing the optical  
2 beam reflected from the first reflector from the output of the evanescent  
3 coupler to an optical device disposed in semiconductor material, wherein  
4 the evanescent coupler including the first and second optical paths and the  
5 first reflector are also disposed in the semiconductor material.

1           18.    A system, comprising:  
2           a laser having a laser cavity including a gain medium defined between  
3   first and second reflectors and an evanescent output coupler optically  
4   coupled to the laser cavity, the evanescent output coupler including the first  
5   reflector integrated with the laser cavity and an output of the evanescent  
6   coupler such that an optical beam in the laser cavity is reflected from the  
7   first reflector as the optical beam is concurrently evanescently coupled to  
8   the output of the evanescent coupler; and  
9           an optical receiver optically coupled to receive the optical beam from  
10   the output of the evanescent coupler.

1           19.    The system of claim 18 wherein the first reflector comprises a  
2   Bragg grating.

1           20.    The system of claim 18 wherein the first reflector is defined at a  
2   plane of symmetry in a center of the evanescent coupler.

1           21.    The system of claim 18 wherein the evanescent coupler  
2   including the first reflector are disposed in semiconductor material.

1           22.    The system of claim 21 further comprising an optical device  
2   optically coupled between the output of the evanescent coupler and the  
3   optical receiver.

1           23.    The system of claim 22 wherein the optical device is disposed in  
2   the semiconductor material.

1           24.    The system of claim 21 wherein the optical device comprises an  
2   optical modulator adapted to modulate the optical beam in response to a  
3   signal.

1           25.    The system of claim 18 wherein the laser comprises a external  
2   cavity laser (ECL).

1           26.    The system of claim 21 wherein the semiconductor material  
2   comprises silicon.